NASA BUDGET PRESS CONFERENCE

STATEMENT OF JAMES M. BEGGS, ADMINISTRATOR

JANUARY 31, 1983

I am pleased to have this opportunity to say a few words about President Reagan's proposed budget for NASA for Fiscal Year 1984.

This is a constrained budget consistent with the serious fiscal and budgetary situation facing the nation. Nevertheless, it reflects the President's renewed commitment to a strong national space and aeronautics program as outlined in his two important policy statements on space and aeronautics last year.

Inherent in both statements is NASA's obligation to help strengthen the national security and maintain United States leadership in space and aeronautical technology by continuing to foster creativity, innovation, private-public sector cooperation and cooperation in the international sphere. This budget, I believe, moves us forward toward those goals.

The President has proposed a NASA budget of just over $7.1 billion for FY 1984. This represents an overall increase of $267 million, 4 % over our present plan for FY 1983. With mainline development work on Shuttle and Landsat D behind us, we have been able to continue our ongoing programs and have some leeway for modest expansion, primarily in space technology, physics and astronomy, aeronautics research and technology and construction of facilities. The budget includes come initiatives, which I will summarize for you in a few minutes.

But first, let me turn to the $5.7 billion requested for Research and Development. This amount comprises about 80 % of the total request. Some 61 % of the $5.7 billion, or $3.5 billion, would be earmarked for the Space Transportation System, including Shuttle production and operation, upper stages for use with the Shuttle, Spacelab, the proposed new Tethered Satellite System and other support equipment and launch vehicles.

The division of the $3.5 billion reflects the continuing trend, begun last year, to spend relatively more on operations and relatively less on capability development.

Although mainline Shuttle development and flight testing have been accomplished, we are still working on related STS development, and, of course, on production of the Shuttle fleet. For FY 1984, we are requesting $1.9 billion for Space Transportation Capability Development, down from $2.1 billion in the last fiscal year, and $1.6 billion for Space Transportation Operations, up $100 million from FY 1983.

The three flights of the Space Shuttle Orbiter Columbia in 1982 marked the completion of the orbital flight test program and the transition to an operational system. With the successful launch of two commercial communications satellites on STS-5, the first operational flight last November, we are moving toward the goals of making the Space Shuttle System fully operational as quickly as possible and expanding its capabilities to the fullest. Consistent with these goals, Shuttle-related activities this budget will support include:

- a schedule of five flights in FY 1983 and eight to nine flights in FY 1984, including the first demonstration of the Shuttle's ability to rendezvous with, retrieve and repair a spacecraft (the Solar Maximum Mission) in orbit;

- completion of OV-104, the fourth orbiter, and the acquisition of orbiter structural spares to support the four orbiter fleet;

.the first flight of Spacelab, the European-built scientific laboratory designed to orbit in the Shuttle's cargo bay, and scheduled for launch at the end of FY 1983; and integration and checkout for the second Spacelab verification flight, scheduled for FY 1984;

.construction of new facilities and enhancement of existing facilities to meet increasing Shuttle flight rates, improve Shuttle manufacturing and processing efficiencies and provide improved research and testing capabilities;

.a joint program with the Air Force to modify the Centaur upper stage for use with the Shuttle, and completion of the Inertial Upper Stage vehicles to support the Tracking and Data Relay Satellites;

. continued procurement and production of Shuttle External Tanks, Solid Rocket Boosters and other elements of flight hardware and software;

.initiation of hardware development for the Tethered Satellite System, a cooperative U.S.-Italian project designed to provide a new capability for conducting experiments in space at distances up to 100 kilometers from the Shuttle orbiter.

The Tethered Satellite System is one of four initiatives totaling more than $50 million, contained in NASA's FY 1984 budget request. These important new activities will stretch the scope of our program in science, applications and aeronautics. Our other plans include:

.a project to map the surface of Venus using radar imaging techniques. The Venus Radar Mapper (VRM) replaces, at a much lower cost, the Venus Orbiting Imaging Radar (VOIR) mission authorized by Congress in FY 1982. It will provide valuable scientific insight into Venus' physical properties and processes and help us better to understand those of our own planet;

- the Advanced Communications Technology Satellite (ACTS) project to develop and flight-test the high-risk technology needed to ensure continued United States preeminence in the field of satellite communications. The ACTS project will involve a novel procurement approach and cost/risk-sharing arrangement with industry, which will provide significant cost savings to the government;

- the Numerical Aerodynamic Simulation (NAS) capability project, which would be developed over the course of the next few years. The NAS, a large computer system, would have a major impact on aircraft design methods, improving accuracy and reliability, while at the same time, cutting down on long and expensive wind tunnel and flight testing;

The NAS would be the centerpiece of our proposed FY 1984 aeronautical research and technology program, for which we are requesting a total of $300 million, $20 million over FY 1983. As the President's aeronautics policy statement recognized, maintenance of a strong technology base is necessary to develop future aircraft to enable the United States to compete strongly in the world aviation marketplace and to maintain the superiority of the nation's military aircraft.

The budget would allow for advanced work and continued fundamental research and technology development in all disciplines vital for more efficient and effective civil and military aircraft. With the opening of the new National Transonic Facility at Langley Research Center in June 1983, the nation will have the most advanced transonic speed test capability in the world, allowing near-exact simulation of flight conditions using models of the world's most advanced aircraft. Other major areas of emphasis will be on materials and structures, computer science and applications, rotorcraft, subsonic aircraft and advanced concepts research.

Let me say a word here about activities in this budget which carry out that part of the President's space policy that requires NASA to "continue to explore the requirements, operational concepts, and technology associated with permanent space facilities."

The Space Shuttle makes it possible to establish and maintain permanent facilities in space. For example, revisiting and refurbishing the Space Telescope once it is in orbit, will be possible only because we have the Shuttle. There will be other such permanent facilities in space, and the FY 1984 budget includes a modest amount for definition and planning efforts to help us understand how they should be developed and maintained in earth orbit.

Although we have no specific plans to establish a permanent manned space station in earth orbit, we are continuing our planning and study efforts. These studies center on potential user requirements, potential hardware and software systems, potential science applications payloads and an overall "architecture" which could accommodate specific missions.

With Congressional approval, this budget will also support such vital ongoing NASA programs as:

.further development of the Space Telescope, which will be Shuttle-launched and tended;

.continued development of the Galileo orbiter and probe for a mission to Jupiter, and of the International Solar Polar Mission, leading to Shuttle/Centaur launches in 1986;

.continued hardware development of the Gamma Ray Observatory, leading to a planned launch in 1988, and continued support for the planetary exploration satellites Pioneer Venus Orbiter, Pioneer 6 through 11, and Voyagers 1 and 2;

I have given you brief highlights of our budget program for Fiscal 1984. But let me add two other important items.

First, this budget provides an increase in funding for the kind of work done by principally at our universities. This includes research and analysis of the data from our satellites and work in the basic scientific disciplines that support the space and aeronautics programs.

Secondly. this budget maintains our civil service workforce at approximately the present level. The maintenance of this kind of staffing stability is important to an R&D agency like NASA, which this year will celebrate its 25th anniversary. It allows us to hire the young scientists and engineers we need to assure the vitality of our technical workforce and maintain the creativity and innovation that have characterized our work for the past quarter century.

Thank you very much.

BEFORE THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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FISCAL YEAR 1984 :

BUDGET BRIEFING :

WITH MR. BEGGS :

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January 31, 1983

P R O C E E D I N G S

BRIAN: Good afternoon, ladies and gentlemen.

We'll start the briefing with a statement by Mr. James Beggs, Administrator of NASA, and then we'll go to questions. There will be a few housekeeping details between the end of Mr. Beggs' statement and the Q and A, and I'll go into that when the time comes.

Mr. Beggs.

MR. BEGGS: Thank you, Brian.

Good afternoon, ladies and gentlemen. It's my pleasure to introduce President Reagan's proposed budget for NASA for fiscal year 84.

It is a constraining budget, consistent with the serious fiscal and budgetary situation facing the nation. Nevertheless, it reflects the President's renewed commitment to a strong national space and aeronautics program, as outlined in his two important policy statements on space and aeronautics this last year.

Inherent in both statements is NASA's obligation to help strengthen the national security and maintain United States leadership in space and aeronautical technology by continuing to foster creativity, innovation, private public sector cooperation and then coordination, and cooperation in the international sphere.

This budget I believe moves us forward towards these goals.

The President has proposed a NASA budget of just over $7.1 billion for FY 84. This represents an overall increase of $267 million, four percent over our present plan for FY 83.

With mainline development work on Shuttle and and Landsat D behind us, we have been able to continue our ongoing programs and have some leeway for modest expansion, primarily in space technology, physics and astronomy, aeronautics research and technology, and construction of facilities.

The budget includes some initiatives, which I will summarize for you in just a few minutes.

First let me turn to the 5.7 billion requested for R&D. This amount comprises about 80 percent of the total request. Some 61 percent of the 5.7 billion, or $3.5 billion, will be earmarked for the space transportation system, including Shuttle production and operation, upper stages for use for the Shuttle, Space Lab, a proposed new tethered satellite system, and other support equipment and launch vehicles.

The division of the 3.5 billion reflects the continuing trend begun last year to spend relatively more on operations and relatively less on capability

development.

Although mainline Shuttle development and flight testing have been accomplished, we are still working on related STS development and of course on production of the Shuttle fleet.

For FY 84 we are requesting $1.9 billion for space transportation capability development, down from 2.1 billion in the last fiscal year. Or I should more properly say this current fiscal year.

The 1.6 billion for space transportation operations is up 100 million from FY 83.

The three flights of the Space Shuttle Columbia in 1982 marked the completion of the orbital flight test program and the transition to an operational system. With the successful launch of two commercial communication satellites on STS5, the first operational flight last November, we are moving towards the goals of making the space shuttle system fully operational as quickly as possible and expanding its capabilities to the fullest.

Consistent with these goals, Shuttle related activities in this budget will support: a schedule of five flights in FY 83 and eight to nine flights in FY 84, including the first demonstration of the Shuttle's ability to rendezvous with, retrieve, and repair a

spacecraft, the Solar Maximum Mission, in orbit;

Completion of OV-104, the fourth orbiter, and the acquisition of orbital structural spares to support the four orbiter fleet;

The first flight of Spacelab, the European-built scientific laboratory designed to orbit in the Shuttle's cargo bay, scheduled for launch at the end of FY 83, and integration and checkout for the second Spacelab verification flight scheduled for FY 84;

Construction of new facilities and enhancement of existing facilities to meet increasing Shuttle flight rates, improve Shuttle manufacturing and process efficiency, and provide improved research and testing capabilities;

A joint program with the Air Force to modify the Centaur upper stage for use with the Shuttle and completion of the inertial upper stage vehicles to support the tracking and data relay satellites;

Continued procurement and production of Shuttle external tanks, solid rocket boosters, and other elements of flight hardware and software;

And finally, initiation of hardware development for the tethered satellite system, a cooperative U.S./Italian project designed to provide a new capability for conducting experiments in space at distances up to

100 kilometers from the Shuttle orbiter. The tethered satellite system is one of four initiatives, totalling more than $50 million contained in NASA's FY 84 budget request.

These important new activities will stretch the scope of our program in science, applications, and aeronautics.

Our plans include: a project to map the surface of Venus using radar-imaging techniques. The Venus radar mapper replaces at a much lower cost the Venus orbiting imaging mission authorized by Congress in FY 82. It will provide valuable scientific insight into the Venus physical properties and processes to help better understand those of our own planet.

Second, the Advanced Communications Technology Satellite to develop and flight test the high-risk technology need to ensure continued United States pre-eminence in the field of satellite communications. The ACTS project will involve a novel procurement approach, a cost/risk-sharing arrangement with industry, which will provide significant cost savings to the Government.

Third, the Numerical Aerodynamics Simulator which will be developed over the course of the next several years. The NAS, a large computer system, will

have a major impact on aircraft design methods, improving accuracy and reliability while at the same time cutting down on long and expensive wind tunnel and flight testing. The NAS will be the centerpiece of our proposed FY 84 aeronautical research and technology program, for which we are requesting a total of $300 million, $20 million over FY 83.

As the President's aeronautic policy statement recognized, maintenance of a strong technology base is necessary to develop future aircraft to enable the United States to compete strongly in the world aviation marketplace and to maintain the superiority of the nation's military aircraft.

The budget will also offer advanced work and continued fundamental research and technology development in all disciplines vital for more efficient and effective civil and military aircraft. With the opening of the new national transonic facility at Langley Research Center in June of 1983, the nation will have the most advanced transonic speed test capability in the world, allowing new exact simulation of flight-op conditions using models of the world's most advanced aircraft.

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tions, rotorcraft, subsonic aircraft, and advanced concepts research.

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There would be other such permanent facilities in space and the FY 84 budget includes a modest amount for definition and planning efforts to help us understand how they should be developed and maintained in earth orbit.

Although we have no specific plans to establish a permanent manned space station in orbit, we are continuing our planning and study efforts. These studies center on potential user requirements, potential hardware and software systems, potential science applications payloads and an overall architecture which could accommodate specific missions.

With Congressional approval, this budget will

also support such vital ongoing NASA programs as the further development of the space telescope, which will be Shuttle-launched tended: continuing development of the Galileo orbiter and probe for a mission to Jupiter and the international solar polar missions leading to Shuttle Centaur launches in 1986; and finally, continued hardware development of the Gamma Ray Observatory leading to the planned launch in 1988 and the continued support for the planetary explorations satellites Pioneer Venus Orbiter, Pioneer 6 and 11. and Voyager's 1 and 2.

I've given you just the brief highlights of the budget program for FY 84. Let me add two other important points.

First, this budget provides an increase in funding for the kind of work done principally at our universities. This includes research and analysis of the data from our satellites and work in the basic scientific disciplines that support space and aeronautic programs.

And secondly, the budget maintains our civil service work force at approximately the present level. The maintenance of this kind of staffing stability is important for an R&D agency like NASA, which this year, as you know, will celebrate its 25th anniversary. It

allows us to hire young engineers and scientists that we need to assure the vitality of our technical work force and maintain the creativity and innovation that have characterized our work for the past quarter century.

Thank you very much. We will now take questions.

BRIAN: While Mr. Beggs, Dr. Mark and Mr. Newman are going to the table, I'll mention a couple of things that most of you have heard before.

There is a transcript. For those of you who want transcripts mailed to you, would you please fill out an envelope in the back of the room before you leave and leave it with us.

Because of the transcript, when you ask a question will you wait for the microphone and identify yourself.

This is a budget briefing and many of you came here to cover budgets, so because of that we'll structure it a little differently than usual. General Abrahamson has agreed to wait until after the budget briefing is over and answer detailed questions--I'm not trying to head off general questions--but detailed questions about the situation with the hydrogen leak and the Shuttle Challenger. And he has some view graphs, so it's going to take a minute to recycle at the end of

the budget briefing itself.

And finally, a little commercial for one of our other programs. A week from tomorrow, on February 8, in this room, we're having a briefing on the Landsat imagery, the Thematic Mapper, and we'll fill this room with some of the most exciting pictures of the Earth that we've ever seen. That's next week.

Now we'll start taking questions.

MR. BENEDICT: Howard Benedict, A.P.

Mr. Beggs, the budget specifically says that there will be no money in this or any other act for a fifth orbiter unless it is approved by both the appropriations committees.

Are you planning to make a pitch in the Congress with the appropriations committees to get some money back in there?

MR. BEGGS: No. The language speaks for itself, and there is no hidden agenda behind the language.

BRIAN: On the other side of the aisle, Al Rossiter.

MR. ROSSITER: Al Rossiter, UPI.

Mr. Beggs, as a follow-up to Howard's question, Jay Keyworth earlier today said the four orbiter fleet would be adequate for the future, foreseeable future.

Do you agree with that assessment?

MR. BEGGS: In the analysis we did going into this budget cycle of the current market model that we have, it appears that four orbiters will be adequate. With a desire to ensure that we had a very healthy four orbiter capability, we are putting in money to buy additional structural spares, which will ensure that if we do have a problem with one of the four that we can either repair it or ensure that it returns to operational capability.

The difference between what we've shown this year and what we have previously shown is simply the fact that as our market projections have matured and we have seen the impact of the year on our market, we feel that we have adequate capability with four orbits.

BRIAN: Dave Dooling.

MR. DOOLING: Dave Dooling, the Huntsville Times.

Could you give us a rundown of phase B money, if any, that's in advanced programs; specifically, the advanced X-ray astrophysics facility, the teleoperator maneuvering system, other things of that ilk, or is there any there. Could you just give a breakout of how the advanced programs' money will be spent?

MR. BEGGS: In fiscal 84 there's about $15 million, which is up a little over $3 million from 83, and it in all those areas. I think we can give you a

breakout of what's planned in there, although, as you know, those programs tend to move with the times.

MR. O'TOOLE: Tom O'Toole for the Washingtom Post.

Explorer development goes up $15 million. Could you explain that, number one?

And number two, on the new Venus mission, could you give us a timetable for launch and a total cost estimate and the difference between the new mission and the old mission?

MR. BEGGS: Oh, golly. Bert, do you have any of those numbers at hand?

MR. EDELSON: Bert Edelson, from Space Science and Applications.

I don't think I have all the numbers at hand. Your first question had to do with the augmentation of the Explorer program, and we've found in the past that the Explorer program has been a very efficient way of carrying on relatively low cost missions and allowing us to schedule our work in accordance with the available technology and work the programs out ourselves.

And this has been very effective and very efficient, and it's been recognized by OMB and by the Congress in the past as a very efficient way of operating.

The additional money that we have this year--I

think the augmentation was $12 million. Yes, $12 millions. It will allow us to get on with COBE, the Cosmic Background Explorer; XTE, the X-ray Timing Experiment, in which we have just selected the experiments; and we hope to make a start on EUVE--sorry about all of the acronyms--the Extreme Ultra Violet Explorer.

We appreciate and we like very much this way of doing business. We understand that on major new facility classes, those that run into the hundreds of millions of dollars, we will still have to go through the new start process, which is necessary because of the large expenditures and the great number of people involved.

But on the relatively smaller projects like the Explorers have been, it's a much more efficient and much more effective way of getting the programs done.

The problem that we face is that there were a large number of Explorers proposed in the early 70s and we're just getting around to doing them. For example, COBE, which we've just given the go-ahead on, the Cosmic Background Explorer, was proposed in 1973 in response to an AO, and we'll finally get around to launching it in 1989, which is a very long time, when you figure how fast we've done things in the space

program before, to go on an Explorer. Over a period of 16 years is too long.

So we welcome that augmentation.

Now I've already talked so long, I've forgotten the--

MR. BEGGS: (Interrupting) The specific numbers that you asked for on the Explorer, it's up overall $12.5 million, and the money goes into, as Bert said, the COBE, the Extreme Ultra Violet Explorer, primarily, of that increase.

There's some other minor increases or small increases that he stated.

With respect to the VRM, the broad answer to your question is that the VRM is budgeting at about half the cost of the previous VOIR satellite.

MR. EDELSON: Our program cost on that is about $350 million, with everything included.

VOICE: The launch?

MR. EDELSON: No, not the launch vehicle; not the launch vehicle.

And previously it was just about double that, the VOIR was about double that.

BRIAN: Yes, would you identify yourself, please.

MR. WALDROP: Mitch Waldrop, Science Magazine.

Two questions on the fifth orbiter: Will the spare parts that you're purchasing be sufficient to keep the production lines open so that if you do want to get a fifth orbiter later you can do it without extra start-up costs?

And the second question on the fifth orbiter is: If you have to live with a four orbiter fleet for the rest of this decade, how is that going to constrain construction of a space station?

MR. BEGGS: Well, the answer to the first part of the question is, it will keep the line open for another period--an additional period of time, perhaps as much as a year or more.

If we do have a requirement to go back and construct another orbiter because of the loss of one of the four, then it would allow us to do that, at somewhat higher overall cost. But the initial cost will be, of course, considerably lower.

With respect to the second part of the question, we don't believe it will. The current model--we don't believe that we will have a constraint on space station or other activities that we intend to support by the use of Shuttle. We think we've got plenty of capability within the four orbiter capability to carry us out at least into the--well into the 90s.

BRIAN: Al Sehlstedt.

MR. **SEHLSTEDT:** Al Sehlstedt, Baltimore Sun.

Mr. Beggs, on page six of your statement you refer, in discussing this new communications satellite, a novel procurement approach of cost risk sharing, and I was wondering if you meant by novel that this was the first time NASA had invited industry to take some of the risk and if in the future you intended to do this more often.

MR. BEGGS: No. As you well know, we have invited industry to take risk with us on a number of programs in the past. The program that we're trying to run here is a little bit different than others in that it would involve the industry in what is essentially an operational capability with the first system.

We are going to try to see whether we can entice someone in the industry into going into that with the idea of moving directly into commercialization, at least a part of the system.

BRIAN: Okay.

MR. JOYCE: Chris Joyce, with New Scientist Magazine.

How did the decision not to go ahead with the fifth orbiter affect your negotiations with Space Tran right now? What is the status of those negotiations?

MR. BEGGS: Well, I don't think it will affect our negotiations particularly with that company. The status of that negotiation is that it is pending; we continue to talk to them. I don't think it will affect one way or the other the decision that we would make with respect to that offer.

BRIAN: Let's try the other side of the aisle. The woman here and then Dooling.

MS. FOLEY: Theresa Foley, Aerospace Daily.

Can you specify which structural spares you're going to procure, how much money you're going to spend on them? And can you tell us, would it require a catastrophic loss before you could use that type of a structural spare or would some kind of normal breakdown require you to replace an actual structural part of an orbiter?

MR. BEGGS: Well, we would use a spare as we would use any of our other spares for the fleet. Any time we have a need for them, we would draw them down.

The amount of money we're talking about is roughly $400 million over the next four years, including 1984.

The spares themselves will be pretty much all of the--or most of the primary structure of the orbiter.

Did I say that right?

MR. EDELSON: Certain parts of the spares would be completed more fully than others. For example, some of the items that have a higher probability of damage, such as some of the gear door, for example, or some of the elevons, these kinds of surfaces. We would propose that we complete those so that they would in fact be ready to go spare.

Other items that are a lower probability but are important to allow us to maintain a shorter lead time to fully replace, such as the mid fuselage, we would probably not complete, put all of the thermal protection system in those items on it.

So it's a different strategy depending on the risk associated with each of the spare items.

BRIAN: The man behind Theresa.

MR. DOOLING: Dave Dooling, the Huntsville Times.

What new starts did you request that were turned down?

MR. BEGGS: The upper atmospheric research satellite. What else.

There are some ongoing programs in technology, but that's, you know, that's one of those things that goes on in the normal give and take; projects fall in and fall out.

Do you recall any others?

MR. EDELSON: Well, there were other--

MR. BEGGS: Rotorcraft and the work in the advanced turbocraft activity fell out of the aeronautics budget.

I think that pretty well covers it.

MR. EDELSON: These are really not new starts; these are augmentations to ongoing programs. I think to call them new starts is probably wrong. I think UARS is the only one that I would say is a clean case.

BRIAN: Craig Covault.

MR. COVAULT: Craig Covault, Aviation Week.

I hate to belabor the fifth orbiter, but I do have a fifth orbiter and then an aero question.

Jim, would not you consider your fifth orbiter a lost new start?

MR. BEGGS: Yes, it's been widely publicized that we asked for the fifth orbiter, but I've got to say that the loss, so called loss of the fifth orbiter was largely due to the fact that we ourselves couldn't sustain, as we got into the examination of the rationale, could not sustain an argument for it.

In short, it was mostly a willingness on our part to compromise in getting the structural spares support that we felt we needed in order to sustain the

problem that both Dr. Mark and I have referred to a number of times, that we want to ensure that if we have a problem with one of the four, in the sense of an accident or a problem that would require us to stand out for a while, that we have back-up for that.

And we essentially got that, and we have with that, I think, a fairly flexible situation in the use of our fleet.

MR. COVAULT: Okay. And on aero, could either perhaps Tom Newman or Jack Kerrebrock explain the reductions in the subsonic aircraft and the advanced propulsion areas on the aeronautics.

MR. BEGGS: Do you want to try, Jack?

Jack Kerrebrock.

MR. KERREBROCK: Well, let me say that we won't be proceeding at the pace that we might desire in all of the elements of the program; however, the program that we are recommending ensures that continued progress will be made in a wide range of promising technologies, while at the same time it allows us to initiate new efforts essential to the continued U.S. preeminence in aviation.

The items that I think are of particular concern to you are in the advanced propulsion area?

MR. COVAULT: It would be the subsonic aircraft

and advanced propulsion. One dropped 17 to 5 and the other 28 to 0.

MR. KERREBROCK: Well, let me just assure you that we will continue to work in these very promising areas.

For example, in the area of advanced propulsion, which was mentioned earlier, and by that I think most of us identify the advanced turbo prop program, within the $300 million budget request and with the funds that had been appropriated in 82 and 83 we have been able to start a large-scale propeller design, fabrication and testing effort, all of which has to precede any kind of flight testing program.

And we'll also be exploring alternative concepts, like pusher propellers, counter-rotating systems.

The acceleration of the flight test program, which has been called for in some circles, we won't be able to support; however, the activities that we are going to carry on will lay a very solid tech base for continuing this program.

MR. COVAULT: Again, had you requested more than that? You seem to be on a very strong downward trend at least in these two areas, advanced propulsion and subsonic aircraft.

MR. KERREBROCK: Well, we had a very strong program of augmentation in 82 and 83. This program of augmentation, as I say, will carry us through a solid technology program in the advanced propulsion area, which is mainly advanced turbo prop.

MR. BEGGS: The answer to your question, Craig, is yes, we always request more, as you well know. And in the give and take of the budget discussions we came to a $300 million level, and the priorities within that $300 million level are ours; that is, they are NASA's. They are not the OMB's or anybody elses.

And the areas you referred to just below the line in our priority list.

BRIAN: Let's go back toward the back. We haven't been down there for a while.

MR. SILVERSTONE: Ken Silverstone, Defense Daily.

Mr. Beggs, are you telling us that the country is not going to have a fifth orbiter unless one is lost, or could that be reassessed later this year?

And secondly, does this new change in projected missions make it less likely that Space Transportation Corp. would be interested in funding a fifth orbiter?

MR. BEGGS: Well, like any other market that is as new as this one, the crystal ball is kind of

clouded.

I can only tell you what we see as of the moment, and what we see as of the moment, with the market penetration that the ion has made over the next several years the need for a fifth orbiter in the near term is definitely very, very low, if not nonexistent. It looks like we have ample capacity in what we have.

There is nothing that we see at the present time that requires it. If the situation were to change, if the ion for whatever reason were to suffer further set-backs, then we'd have to reassess that. I'm just telling you where we stand today.

And that is the projection that we have made. It's the best information we have at hand.

MR. SILVERSTONE: How long can we wait on the fifth orbiter? Is there a deadline for when you can have a fifth orbiter? Is it one year, two years? Is the program ended then or can you keep it on indefinitely?

MR. BEGGS: Well, we take delivery of the 101 in the latter part of 1984; November or December of 1984. And with the structural spares we've added, we will be producing somewhat beyond 1984, so we still have a couple of years where the production line will still be warm, and within that, we should be able to make a

decision should a need arise.

MR. BENEDICT: Howard Benedict, AP, again.

As I understand it, you asked for $50 to $60 million to continue space station definition and technology, and if I read the budget right the OMB is requesting only $4 million. What can you do with $4 million, and in the long run, is this going to cripple your efforts down the line to really have a space station by the early 1990s?

MR. BEGGS: Well, first of all, you don't read the budget right. The $4 million that you are referring to is the figure in 1983. That same figure for that same line is $6 million in 1984, and that's primarily for the work of the space station task force.

Just as in 1983 we are funding research and technology out of the OAST budget and a small amount out of the OSSA budget, we will similarly be funding an increased amount of that kind of thing in 1984.

The totals, again, on the way we keep our books are in the order of $33 million in 83 and something like $43 million in 84; about a $10 million increase.

MR. EDELSON: I wonder if I could add one point to that answer.

I think when you--what we're talking about in terms of the space station is a strong in-house effort,

and if you go back and look at the development of the Shuttle, we did not have a Shuttle line item until 1972 and yet we did a lot of in-house work on the Shuttle between 68 and 72, and I think we're in the same position with respect to the space station that we were with respect to the Shuttle 10 or 15 years ago, that there's a lot to be done within the NASA institution before we go out and propose something.

VOICE: Getting back to the Venus mapper again, could you encapsulize for us some of the differences between the currently request VRM and VOIR? What are we sacrificing in terms of mission, in terms of data acquisition to realize the projected cost savings between the two?

MR. EDELSON: There are two differences between the VOIR and the VRM that make up the major difference between the $350 million that we have projected for VRM and the 700 that we have for VOIR.

One of them is that all of the experiments that were planned for VOIR except the imaging radar have been taken off the spacecraft. And in the original proposal we had atmospheric experiments and we had some radio science and a few other things that are not now being done on VRM.

The other is that the spacecraft itself was

redesigned to make it unnecessary to use two antennas. The original VOIR spacecraft had two antennas. This one will have one, and the same antenna will be used for the imaging job on Venus and then also for the transmission of the data back to Earth.

So those two factors, that is, a major reduction in scope of the mission and a change in the engineering design of the spacecraft, account for the difference in cost.

BRIAN: Let's get Mitch here and then go across the aisle and pick up Theresa.

MR. WALDROP: Mitch Waldrop, Science.

I've heard no mention of global habitability. Are you still pushing forward on that? Where is the research going to be coming from, and have you resolved your turf battles with some of the other agencies, such as NOAA.

MR. BEGGS: Well the answer is, we will be meeting with the international community next month, in February, and talking and discussing a plan and their participation in our planning effort for global habitability. We haven't--we are proceeding as we always proceed, in a planned way.

The support from that comes from the ongoing program in OSSA, which there's about, in 1984, in the

order of $29 million in upper atmospheric research and analysis, and there are a number of other line items which will support our general planning and continuation of the technology base for that work.

We hope to involve the international community in an effort right from the beginning, and if we can get that, then we'll go forward with proposals for new starts and implementation in subsequent years.

BRIAN: Theresa and then Dave.

MR. BEGGS: I don't have any turf problems with NOAA.

MS. FOLEY: Theresa Foley, Aerospace Daily.

Are you giving any consideration to extending the eight space station mission analysis studies, and would it be beneficial to NASA if Congress decides to earmark some extra money for the space station?

MR. BEGGS: Go ahead, Dr. Mark. I take the easy ones; he takes the hard ones.

DR. MARK: I guess the studies will be continued with the $4 million that we have and they will be re-structured accordingly.

As I've already said previously, the major emphasis on the space station efforts will be in-house. What we'll do is to organize teams at the various centers to pick up certain parts of that work, very much the same

way we did in the Shuttle program 15 years ago.

With respect to the addition of funding by the Congress, I think the safest thing to say at this point is, no comment.

MR. BEGGS: We will be involving the industry in some of the technology work, which is ongoing.

DR. MARKS: Yes, I'm glad you said that. That's terribly important. Nothing that I've said should be construed to say that we want to cut the industry out, and especially in the technology work where we have quite a bit of money, they are already involved and will continue to be involved.

MR. DOOLING: Dave Dooling, the Huntsville Times.

Mr. Beggs, I'm not satisfied with the answer I got earlier about advanced programs.

Will there be phase B funding for AXAF, the the Advanced X-Ray Astrophysic Facility?

MR. BEGGS: Yes, that was in--I think that's what Dr. Edelson said in his remarks,and that's true. The answer is yes.

MR. DOOLING: Okay. And the teleoperator maneuvering system, will that get phase B?

MR. BEGGS: Not phase B. I don't think we're at that point yet. But it will--there is money in the budget to pursue that idea.

BRIAN: Quickly, there are other centers that are withholding. We will come back here for a few questions before we end up.

First Kennedy. Do you have questions from the Kennedy Space Center.

VOICE: There's no questions from any of the centers. Thank you.

BRIAN: Thank you.

All right. Craig, you're up.

MR. COVAULT: Three questions, I believe. On the advanced--Craig Covault, Aviation Week.

On the advanced Shuttle programs, for either Tom Newman or General Abrahamson, would you run some of the advanced Shuttle programs and will you be able to start development of an 8 psi or I guess increase development of an 8 psi suit?

ANSWER NO. 1: We don't have the development funding on the 8 psi suit.

ANSWER NO. 2: Not development. If what you're asking is development, Craig, the answer is no. We are still looking at the higher pressure activity to see whether we want to go forward, but we have no development money in this budget as of the moment.

ANSWER NO. 1: Craig, are you asking basically for a breakdown of the 15 million in advanced programs?

MR. COVAULT: The two or three major items there.

ANSWER NO. 1: Well, 6 million of the 15 is planned on the space station. Another 4 million is planned on orbital services advance studies, advance development, and those include the teleoperator maneuvering system and it includes some EVA tools and equipment, some rendezvous definition study work.

The other elements, some work on unmanned platforms; some work on advanced transportation systems, including an orbital transfer vehicle studies.

MR. COVAULT: And under the Spacelab item, I guess, your request had sought about $11 million for a Shuttle infrared telescope facility. Did you get any part of that funding to start a fair size of work on the Certif?

UNIDENTIFIED SPEAKER: There is some Certif work in there. There's about a million and a half in the 84 plan on the Certif. It's still, again, in the definition phase.

On Spacelab payloads as a whole I believe we took a cut of 8 or 10 million on a base of about 90 million requested, if I remember right. I can't remember specifically the amounts for Certif.

MR. SILVERSTONE: Ken Silverstone, Defense Daily.

Mr. Beggs, it's a little hard to tell from your statement on the space station whether that's going to be the next major NASA project like the Space Shuttle was a few years ago.

Can you tell me if you believe that you'll have a new start on that project within a couple years, or are you have difficulties with the Administration over this project?

MR. BEGGS: Well, I think Hans said it very well early on. We're in a stage with the space station that we were in in Shuttle in the late 60s and early 1970-1971 time period, where we are continuing to further refine our plans for it; we're developing the technology that will support it; we are, in short, rounding out the optin to do it. It's a matter of public record, both Hans and me --and I have stated a number of times, we think that's the next major initiative for this agency, and I still feel that way.

When it will be approved I think will depend on the most propitious moment, and the degree to which we have--(tape ends.)

(Tape resuming)

UNIDENTIFIED SPEAKER: We really don't know. You know, one of the reasons for taking some time out and looking at the thing carefully in-house is to define

various levels at which you can do the space station.

You see, a space station is not like the Shuttle, where we had a set of specifications, a set of fairly precise specifications we wanted to meet. You can--on the space station it's a little like an erector set, you can grow as much as you want, and to define a minimum there is rather difficult.

In fact, you know, the space telescope in a certain way is a space station. It's a permanent facility in space. It's never going to be thrown away or shut down.

So to ask a question of cost is really something that has to wait until you make a decision as to what the space station is going to be, and then we can tell you how much it is going to cost.

BRIAN: Okay. In deference to those of you who've had a lot of briefings to--have covered a lot of them this weekend, Jonathan and Mitch and I've got one from George Alexander, and then we'll close it off.

MR. EBERHART: A two point question. The-- Jon Eberhart, Science News.

VRM was not the solar system exploration committee's idea, but it certainly seemed to be the centerpiece of their report, and a lot of member said that whether the showing up or not of VRM in this budget

might say something about the SSEC's credibility.

Did any of your discussions with the administration in OMB leading to the inclusion of VRM say anything about whether other things downstream in the SSEC's recommendations might show up, the kind of thinking that the SSEC embodies? Is this an example of that?

MR. BEGGS: Well, I can make a general response to that. Maybe Hans will want to add.

The space policy paper issued this past year very definitely included the planetary activity as a major goal of our future activity, and I think that this reaffirms that.

There is no specific commitment in this budget to anything else downstream. As you know, there never is. But I think generally speaking, as far as planetary is concerned, it has a solid policy base now.

MR. WALDROP: Mitch Waldrop, Science Magazine.

One of the smaller but more contentious issues last year was the infrared telescope facility in Hawaii. Do you plan to support it this year and for the indefinite future?

MR. BEGGS: You bet.

MR. WALDROP: Thank you.

BRIAN: One last question, from one of our absent members, George Alexander, from the Los Angeles

Times.

MR. BEGGS: I know when I'm beat.

BRIAN: Does this budget reflect any decisions that have been made regarding proposals for a fifth orbiter to be manufactured by a private concern such as Space Trans?

MR. BEGGS: Well, I answered that. I think I responded.

The answer is no. We have--as I said several times, the amount of activity out there in the world of venture capital and entrepreneurial kinds of proposals to us is very encouraging to us.

The degree to which we can accept those things of course depends on an analysis of what benefit it is to the government and whether we think the proposal being made to us is a viable commercial kind of activity and whether we can do the kinds of things they are requesting of us.

And we have been working with the Space Trans for quite a number of months now trying to put that all into some kind of a policy context, and we continue to work on it.

There has been some recent activity from them to modify what they have put in, and we've had any number of discussions with them.

But there's nothing in this budget that works against the commercialization of any aspect of the NASA program where it will enhance or benefit public policy, and we will continue to pursue anybody's proposal to put private money or to make a private initiative in any part of the program.

In addition to that one, as you know, there are a number of other proposals to commercialize expendable launch vehicles and to commercialize upper stages. We are looking very hard at all of them and are trying to keep an open mind in light of the responsibility we have to continue to serve the market, the whole market, for the Shuttle and the other things in the expendable field that we have to do to make sure that there's adequate back-up.

BRIAN: All right, that concludes the budget briefing.

It will take us a minute or two to rearrange the room. General James Abrahamson, the Social Administrator for Space Flight, will give us a status report on the situation with Challenger.

Thanks very much.

NASA News

National Aeronautics and
Space Administration

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For Release:

UPON RELEASE OF PRESIDENT'S
BUDGET MESSAGE, 12:00 NOON
JANUARY 31, 1983

BACKGROUND MATERIAL

NASA FY 1984 BUDGET BRIEFING

HOLD FOR RELEASE AT 12:00 NOON, EST, MONDAY, JANUARY 31, 1983

NOTE: This statement relates to the Fiscal Year 1984 Budget and is subject to the same conditions. There should be no premature release of this statement nor should any of its contents be paraphrased or alluded to in earlier stories. There is a total embargo on the Budget until 12:00 Noon, EST, January 31, 1983, which includes any and all references to any material in the Budget Appendix, or support statements.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BUDGET SUMMARY

BUDGET PLAN
(Thousands of Dollars)

BUDGET PLAN	FY 1982	FY 1983	FY 1984
Research and development.....	4,771,950	5,542,800	5,708,500
Construction of facilities.....	113,700	97,500	150,500
Research and program management.....	1,134,134	1,199,050	1,247,500
TOTAL BUDGET PLAN.....	6,019,784	6,839,350	7,106,500
OUTLAYS.....	6,035,401	6,721,500	6,981,100

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESEARCH AND DEVELOPMENT PROGRAMS

BUDGET PLAN
(Thousands of Dollars)

	FY 1982	FY 1983	FY 1984
SPACE TRANSPORTATION SYSTEMS	3,089,850	3,597,800	3,498,000
Space transportation capability development	2,623,350	2,144,100	1,927,400
Space transportation operations	466,500	1,453,700	1,570,600
SPACE SCIENCE AND APPLICATIONS	896,200	1,034,100	1,068,000
Physics and astronomy	322,433	441,000	514,600
Planetary exploration	210,000	186,400	205,400
Life sciences	39,500	55,700	59,000
Solid earth observations	149,400	132,200	74,400
Environmental observations	133,023	156,900	163,000
Materials processing in space	16,244	22,000	21,600
Communications	21,300	32,400	21,100
Information systems	4,300	7,500	8,900
TECHNOLOGY UTILIZATION	8,000	9,000	4,000
AERONAUTICS AND SPACE TECHNOLOGY	375,800	403,000	438,300
Aeronautical research and technology	264,800	280,000	300,300
Space research and technology	111,000	123,000	138,000
TRACKING AND DATA ACQUISTION	402,100	498,900	700,200
TOTAL	4,771,950	5,542,800	5,708,500

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

OFFICE OF SPACE TRANSPORTATION SYSTEMS

BUDGET PLAN
(Thousands of Dollars)

	FY 1982	FY 1983	FY 1984
SPACE TRANSPORTATION CAPABILITY DEVEVELOPMENT	2,623,350	2,144,100	1,927,400
SHUTTLE PRODUCTION AND CAPABILITY DEVELOPMENT	2,176,750	1,729,300	1,500,000
UPPER STAGES	106,700	167,000	143,200
SPACELAB	100,800	121,200	119,600
ENGINEERING AND TECHNICAL BASE	183,100	70,300	93,100
PAYLOAD OPERATIONS AND SUPPORT EQUIPMENT	46,300	44,400	53,200
ADVANCED PROGRAMS	9,700	11,900	15,000
TETHERED SATELLITE SYSTEM	---	---	3,300
SPACE TRANSPORTATION OPERATIONS	466,500	1,453,700	1,570,600
SHUTTLE OPERATIONS	435,300	1,370,700	1,520,600
EXPENDABLE LAUNCH VEHICLES	31,200	83,000	50,000

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SPACE SCIENCE AND APPLICATIONS

BUDGET PLAN
(Thousands of Dollars)

	FY 1982	FY 1983	FY 1984
PHYSICS AND ASTRONOMY	322,433	441,000	514,600
SPACE TELESCOPE DEVELOPMENT	121,500	137,500	120,600
GAMMA RAY OBSERVATORY DEVELOPMENT	8,000	34,500	89,800
SHUTTLE/SPACELAB PAYLOAD DEVELOPMENT AND MISSION MANAGEMENT	47,556	83,000	92,900
EXPLORER DEVELOPMENT	33,300	34,300	48,700
MISSION OPERATIONS AND DATA ANALYSIS	45,300	74,800	79,500
RESEARCH AND ANALYSIS	22,935	28,800	29,800
SUBORBITAL PROGRAM	43,842	48,100	53,300
PLANETARY EXPLORATION	210,000	186,400	205,400
GALILEO DEVELOPMENT	115,700	91,600	79,500
VENUS RADAR MAPPER MISSION	---	---	29,000
INTERNATIONAL SOLAR POLAR MISSION	5,000	6,000	8,000
MISSION OPERATIONS & DATA ANALYSIS	42,600	38,500	43,400
RESEARCH AND ANALYSIS	46,700	50,300	45,500
LIFE SCIENCES	39,500	55,700	59,000
SOLID EARTH OBSERVATIONS	149,400	132,200	74,400
LANDSAT-4	81,900	61,700	15,800
EXTENDED MISSION OPERATIONS	2,800	1,800	1,000
SHUTTLE/SPACELAB PAYLOADS	12,300	13,800	15,000
GEODYNAMICS	22,900	26,200	28,000
AgRISTARS	14,000	15,000	---
RESEARCH AND ANALYSIS	15,500	13,700	14,600

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SPACE SCIENCE AND APPLICATIONS (Continued)

BUDGET PLAN
(Thousands of Dollars)

	FY 1982	FY 1983	FY 1984
ENVIRONMENTAL OBSERVATIONS	133,023	156,900	163,000
UPPER ATMOSPHERE RESEARCH AND ANALYSIS....	20,500	27,700	29,600
ATMOSPHERIC DYNAMICS AND RADIATION RESEARCH AND ANALYSIS.....	22,300	26,500	28,400
OCEANIC PROCESSES RESEARCH AND ANALYSIS...	16,900	17,000	18,200
SPACE PHYSICS/ATD RESEARCH & ANALYSIS.....	12,123	15,200	15,700
SHUTTLE/SPACELAB PAYLOAD DEVELOPMENT.....	4,100	3,700	7,600
OPERATIONAL SATELLITE IMPROVEMENT PROGRAM.	6,000	6,000	600
EARTH RADIATION BUDGET EXPERIMENT.....	24,000	24,000	15,500
EXTENDED MISSION OPERATIONS.....	16,100	22,800	27,400
UPPER ATMOSPHERE RESEARCH SATELLITE EXPERIMENTS AND MISSION DEFINITION.....	6,000	14,000	20,000
HALOGEN OCCULTATION EXPERIMENT.....	5,000	---	---
MATERIALS PROCESSING IN SPACE	16,244	22,000	21,600
COMMUNICATIONS	21,300	32,400	21,100
INFORMATION SYSTEMS	4,300	7,500	8,900
TECHNOLOGY UTILIZATION			
TECHNOLOGY UILIZATION	8,000	9,000	4,000

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

AERONAUTICS AND SPACE TECHNOLOGY

BUDGET PLAN
(Thousands of Dollars)

	FY 1982	FY 1983	FY 1984
AERONAUTICAL RESEARCH AND TECHNOLOGY	264,800	280,000	300,300
RESEARCH AND TECHNOLOGY BASE.....	(172,758)	(197,700)	(227,800)
SYSTEMS TECHNOLOGY PROGRAMS.....	(92,042)	(82,300)	(72,500)
Rotorcraft Systems Technology.....	21,665	22,300	27,600
High-Performance Aircraft Systems and Technology.....	13,800	15,000	19,900
Subsonic Aircraft Systems Technology....	27,022	17,000	5,000
Advanced Propulsion Systems Technology..	26,155	28,000	---
Numerical Aerodynamic Simulation.....	---	---	20,000
Other Systems Technology.....	3,400	---	---
SPACE RESEARCH AND TECHNOLOGY	111,000	123,000	138,000
RESEARCH AND TECHNOLOGY BASE.....	(104,646)	(115,100)	(126,200)
SYSTEMS TECHNOLOGY PROGRAMS.....	(3,354)	(4,900)	(7,200)
Space flight experiments.....	1,054	1,900	5,500
Long duration exposure facility.....	1,560	2,100	700
Ion auxiliary propulsion system.....	740	900	1,000
STANDARDS AND PRACTICES.....	(3,000)	(3,000)	(4,600)

SPACE TRACKING AND DATA SYSTEMS

TRACKING AND DATA ACQUISITION	402,100	498,900	700,200
SPACE NETWORK.....	(21,800)	(103,800)	(294,700)
Tracking and data relay satellite system.....	---	51,300	242,900
Other space network.....	21,800	52,500	51,800
GROUND NETWORK.....	(237,457)	(242,400)	(231,500)
COMMUNICATIONS AND DATA SYSTEMS.....	(130,343)	(139,300)	(159,800)
ADVANCED SYSTEMS.....	(12,500)	(13,400)	(14,200)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1984 CONSTRUCTION OF FACILITIES PROGRAM

BUDGET PLAN
(Thousands of Dollars)

PROJECTS BY INSTALLATION

Jet Propulsion Laboratory	4,300
Construction of frequency standards laboratory	2,700
Modification to space flight operations facility	1,600
Ames Research Center	3,900
Construction of fluid mechanics laboratory	3,900
Hugh L. Dryden Flight Research Facility	800
Construction of aeronautical tracking facility	800
Langley Research Center	9,500
Modifications and addition for composite materials laboratory (1293A)	5,100
Modifications to 30- by 60-foot wind tunnel (643)	4,400
Lewis Research Center	10,600
Modifications for small engine component testing facility	7,000
Modifications to icing research tunnel	3,600
Space Shuttle Facilities at Various Locations as Follows:	41,300
Modifications for additional chillers for mission control center (JSC)	2,300
Modifications to mobile launch platform #3 (KSC)	27,300
Modifications of manufacuring and final assembly facilities for external tanks (MAF)	11,700
Space Shuttle Payload Facilities at Various Locations as Follows:	12,000
Construction of cargo hazardous servicing facility (KSC)	9,000
Modifications to spacecraft assembly and encapsulation facility (SAEF-2) for cargo processing	3,000
Various Locations	1,700
Relocation of 26-meter STDN Antenna, Spain (JPL)	1,700
Repair of Facilities at Various Locations, Not in Excess of $500,000 per Project	19,500
Rehabilitation and Modification of Facilities at Various Locations, Not in Excess of $500,000 per Project	24,500

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FISCAL YEAR 1984 CONSTRUCTION OF FACILITIES PROGRAM

BUDGET PLAN
(Thousands of Dollars)

PROJECTS BY INSTALLATION

CONTINUED

Minor Construction of New Facilities and additions to Existing Facilities at Various Locations, Not in Excess of $250,000 per Project	4,800
Facility Planning and Design	9,200
Subtotal	142,100
Reimbursement to GSA For NASA Utilized Property at Ellington Air Force Base, Texas, As Directed by OMB	8,400
TOTAL	150,500

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESEARCH AND PROGRAM MANAGEMENT

BUDGET PLAN
(Thousands of Dollars)

INSTALLATION	FY 1982	FY 1983	FY 1984
Johnson Space Center	186,569	195,193	204,616
Kennedy Space Center	155,958	163,341	173,472
Marshall Space Flight Center	172,059	183,952	186,663
National Space Technology Laboratories	6,604	6,332	9,302
Goddard Space Flight Center	169,132	180,865	183,726
Ames Research Center	101,054	107,374	108,835
Langley Research Center	126,591	134,189	139,081
Lewis Research Center	106,412	115,920	121,857
NASA Headquarters	109,755	111,884	119,948
TOTAL	1,134,134	1,199,050	1,247,500

TOTAL NUMBER OF PERMANENT POSITIONS - END OF YEAR

Johnson Space Center	3,346	3,293	3,293
Kennedy Space Center	2,133	2,112	2,112
Marshall Space Flight Center	3,351	3,285	3,285
National Space Technology Laboratories	104	104	104
Goddard Space Flight Center	3,661	3,623	3,623
Ames Research Center	2,037	2,021	2,021
Langley Research Center	2,866	2,845	2,845
Lewis Research Center	2,663	2,479	2,479
NASA Headquarters	1,491	1,457	1,457
TOTAL	21,652	21,219	21,219